

AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions of claims in the application.

1-26. (Cancelled)

27. (Currently Amended) A process of producing lactobionic acid, comprising:

- i) adding to a dairy substrate a carbohydrate oxidase and a catalase,
- ii) incubating said dairy substrate under conditions allowing the carbohydrate oxidase to convert lactose to lactobionic acid,
- iii) maintaining pH during incubation in the range of 3.0 to 9.0 by addition of a weak base having a pK_b-value of at least 3.5, and then
- iv) obtaining the lactobionic acid produced,

whereby an increased yield and a decreased reaction time are achieved in enzymatic conversion of lactose to lactobionic acid.

28. (Previously Presented) The process according to claim 27 further comprising the step of purifying the lactobionic acid to obtain a substantially pure lactobionic acid product.

29. (Previously Presented) The process according to claim 27 further comprising the step of re-using the carbohydrate oxidase added in step i) for a new batch.

30. (Cancelled)

31. (Withdrawn) The process according to claim 30, wherein the weak base is Na₂CO₃ or NH₄OH.

32. (Previously Presented) The process according to claim 27, wherein the dairy substrate is milk and the base is Ca(OH)₂.

33. (Previously Presented) The process according to claim 27, wherein pH in step iii) is maintained by adding the base during a time period that is sufficient to obtain a degree of conversion of lactose to lactobionic acid that is at least 2.5 % higher than in a comparative control process wherein pH is not maintained during incubation.

34. (Previously Presented) The process according to claim 27, wherein the dairy substrate is milk, whey or fractions of whey or a lactose solution/suspension.

35. (Previously Presented) The process according to claim 27, wherein the carbohydrate oxidase is a microbial carbohydrate oxidase.

36. (Previously Presented) The process according to claim 35, wherein the carbohydrate oxidase is a carbohydrate oxidase obtained from a fungus belonging to the genus *Microdochiu*.

37. (Previously Presented) The process according to claim 27, wherein the amount of oxidase used is in the range from 0.1 to 1000 OXU per kg of dairy substrate, from 1 to 500 OXU per kg of dairy substrate, or from 5 to 100 OXU per kg of dairy substrate.

38. (Previously Presented) The process according to claim 27, wherein the conditions in step ii) are selected from the group consisting of temperature, addition of oxygen, amount and type of carbohydrate oxidase, amount and type of catalase and time.

39. (Previously Presented) The process according to claim 38, wherein the temperature is in the range of 0°C to 80°C.

40. (Previously Presented) The process according to claim 27, wherein pH in step iii) is maintained, by adequate addition of a base for a period of time sufficient to obtain a degree of conversion of lactose to lactobionic acid that is at least 5% higher than in a comparative control process where the only comparative difference is that during the incubation the pH is not maintained by adequate addition of a base, at least 15% higher than in the comparative control process, at least 30% higher than in the comparative control process or at least 45% higher than in the comparative control process.

41. (Previously Presented) The process according to claim 27, wherein the pH is maintained at a pH of from 7.1 to about 9.0, from 5 to 6.9, or from 7.1 to 8.

42. (Cancelled)

43. (Previously Presented) The process according to claim 27, wherein the pH is maintained at the stable pH level for a time period that at least lasts until the oxygen level of the incubated dairy substrate has returned to more than 90% of the initial level.

44. (Previously Presented) The process according to claim 27, wherein the pH is maintained at the stable pH level for a time period of from 30 minutes to 48 hours, from 1 hour to 36 hours, or from 2 hours to 24 hours.

45. (Currently Amended) The process according to claim 27, wherein ~~[[a]]~~ the catalase is added ~~in step (i) of the process~~ in an amount that decreases the amount of H₂O₂ produced during conversion of lactose.

46. (Currently Amended) The process according to claim ~~[[45]]~~ 27, wherein the ~~amount of~~ catalase added is in an amount sufficient to obtain an at least 10% decrease in the concentration of H₂O₂ as compared to a control process where the only comparative difference is that catalase is not added.

47. (Previously Presented) The process according to claims 45, wherein essentially all of the suitable amount of oxygen required in step (ii) is obtained by extra addition of a suitable amount of H₂O₂ and wherein the catalase generates the required oxygen from the available H₂O₂.

48. (Previously Presented) The process according to claim 27, wherein an optional purification results in a composition comprising at least 30% lactobionic acid or at least 90% lactobionic acid.

49. (Previously Presented) The process according to claim 27, wherein a starter culture comprising lactic acid bacteria is included in the process and wherein the starter culture may be added to the dairy substrate before or after the oxidase is added.

50. (Withdrawn) A process for obtaining increased yield and/or a reduced reaction time in enzymatic conversion of lactose to lactobionic acid comprising:

- i) adding to a dairy substrate a carbohydrate oxidase and a catalase,
- ii) incubating said dairy substrate under conditions allowing the carbohydrate oxidase to convert lactose to lactobionic acid,

- iii) maintaining pH at a stable level during incubation by addition of a base, and thereby obtain said increased yield and/or reduced reaction time.

51. (Previously Presented) A process according to claim 27 as an integrated part of a food manufacturing process.

52. (Withdrawn) The process according to claim 50, wherein the food manufacturing process is process for manufacturing of a dairy product such as a yoghurt, a milk such as e.g. a calcium fortified milk and a cheese such as process cheese (e.g. for pizza), cream cheese and cottage cheese.

53. (Previously Presented) The process according to claims 46, wherein essentially all of the suitable amount of oxygen required in step (ii) is obtained by extra addition of a suitable amount of H_2O_2 and wherein the catalase generates the required oxygen from the available H_2O_2 .

54. (Withdrawn) A process according to claim 50 as an integrated part of a food manufacturing process.

55. (Previously Presented) The process according to claim 36, wherein the fungus is *Microdochium nivale* or *Microdochium nivale* CBS 100236.

56. (New) The process according to claim 27, wherein the process is completed in less than five hours.